Chesterfield County
Department of Environmental Engineering
Watershed Management Division

Permit #VA0088609

STORMWATER CAPITAL IMPROVEMENT PLAN

Project Name	Description of Project	Location of Project Latitude/Longitude	Name of Receiving Stream	River Basin for Receiving Stream	Best Management Practice	Total Acres Treated by Project[1]	Impervious Acres Treated by Project	Pervious Area/Managed Turf
Regional Stormwater Facility - LTC 20/25	The project, LTC-20/25, is a 2.5 acre watershed-level regional stormwater pond with a 0,5 acre sediment forebay. A dam will be constructed and grading completed to create a sediment forebay and main pond that will impound and treat runoff from an unnamed tributary to Little Tomahawk Creek and for the enhancement of water quality downstream. It will receive stormwater runoff and baseflow from the 368-acre drainage area via the unnamed tributary and directly from the contiguous portion of the watershed. Flow out of the watershed level pond will be via a concrete spillway within an earthen impoundment. A low-level outlet will be provided to maintain base flow and release water at a cooler temperature. Design details such as a labyrinth weir structure, aeration devices, and depth modifications will aerate storm flows before it enters the downstream channel.	37.483333 / -77.670833	Little Tomahawk Creek	Appomattox/Lower James	Construction of Wet Pond (Level 2)	368	200.40	117.60
Mid-Lothian Mines Park Stream Restoration	The project area is located on County property within the Mid-Lothian Mines Park. The total length of stream restoration planned for this project is approximately 1,700 linear feet. The restoration effort also includes retrofitting three stormwater outfalls that currently discharge untreated stormwater runoff into the stream within the restoration limits. The retrofits, step pool, rain garden, and level spreader, will provide demonstration of three options for reducing water quantity and quality impacts from these outfalls.	37.490566 / -77.642500	Un-named tributary to Falling Creek	James River/Middle	Urban Stream Restoration & BMP Outfalls	1700	NA	NA
Wren Nest Stream Restoration	The project area drains to Powhite Creek and consists of a combination of bank stabilization and channel grade control structural (rock weir) retrofits used to dissipate energy, reduce erosive stormwater flows and reconnect flood water to the flood plain. These improvements will provide for protection of the adjacent lots, property and infrastructure, while reducing water quantity and quality impacts downstream. The channel mitigation project is approximately 1,150 linear feet of channel stabilization associated with in-stream structures providing bank stabilization.	37.522134 /-77.589776	Un-named tributary to Powhite Creek through the Settlers Landing subdivision	James River/Middle	Urban Stream Restoration	1150	NA	NA
James River High School BMP Retrofits	The proposed retrofits include the conversion of two retention and one detention facilities to wet ponds (Level 2) at the James River High School in Chesterfield County. The combined stormwater treatment includes approximately 60 acres of both impervious and managed turf cover. The areas draining to the facilities include buildings (high school & elementary school), parking lots and athletic fields.	37.553306 /-77.650107	Unnamed tributary to the James River	James River/Middle	Conversion of Existing Dry & Wet BMPs to Wet Ponds (Level 2)	60	21.44	37.04
Proctors Creek Outfall Retrofits	The proposed project includes the design and construction of stormwater outfall retrofits for the two outfalls located at the Proctors Creek Wastewater Treatment Plant (WWTP) in Chesterfield County. These outfalls currently drain approximately 50 acres of impervious area and managed turf. Stormwater runoff from the Proctors Creek WWTP is currently collected via curb and gutter and is discharged without treatment through two outfalls to Proctor's Creek. Adequate area is available at the outfall locations to design and construct outfall retrofits consisting of a dissipation section, plunge pool, level spreader and diversion area on county property to reduce nutrient and sediment loads prior to discharging to Proctor's Creek.	37.382230 /-77.394079	Proctor's Creek	James River/Middle	BMP Outfalls	50	11.11	38.57
Pocoshock Creek Stream Restoration	The proposed project is located in the area of Midlothian Turnpike and Tuxford Road in Chesterfield County. The stream restoration consists of approximately 4740 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.500202 /-77.588163	Pocoshock Creek	James River/Middle	Urban Stream Restoration	4740	NA	NA
LaPrade Library BMP Retrofit/Conversion	The proposed enhancement/retrofit of an existing 2.0 acre impoundment to a Wet Pond (Level 2). Improvements may include: dredging, construction of forebays, vegetated shelves, baffles, aeration, improving outfall structure(s) and ancillary access improvements to increase the overall treatment efficiency of the facility and to facilitate regular maintenance activities.	37.452280 /-77.563485	Unnamed tributary to the Falling Creek	James River/Lower	Conversion of Existing Pond to a Wet Pond (Level 2)	144	21.23	88.98
County Safety Complex BMP Retrofits	The proposed retrofit project is to reduce the nutrient and sediment loads currently discharged from the existing site by increasing the water quality treatment efficiency of several of the existing BMPs, as well as potentially constructing new BMPs to treat runoff that is currently discharged from the site without treatment. Chesterfield County is planning to conduct an evaluation of up to 36 stormwater BMP retrofit alternatives, including a cost-benefit analysis and anticipated nutrient and sediment load reductions. The County plans to construct those BMP retrofits that are recommended as part of this evaluation.	37.331189 /-77.306000	Unnamed tributary to the Johnson Creek / Johnson Creek & Shand Creek	Appomattox/Lower James	Conversion Existing Dry BMPs to Wet Ponds (Level 1) & Conversion Existing Grassed Swales to Bioswales.	121	11.79	74.67
Falling Creek Reservoir Restoration	The proposed project includes the restoration of Falling Creek Reservoir located in the Falling Creek Watershed which has a drainage area of approximately 34,000 acres. The lake restoration, which encompasses 91 acres, may be accomplished through a series of retrofit techniques such as major sediment cleanouts/dredging, aeration, forebay creation, wetland restoration and bank restoration.	37.458460 / -77.485063	Falling Creek	James River/Lower	Lake Restoration	34000	TBD	TBD
County Complex Green Streets BMPs	The proposed enhancement /retrofit project Divert flow from impervious areas to bioswales and a retrofitted wetland/bioretention pond using interceptor speed bumps.	37.379429 /-77.504199	Proctor's Creek	James River/Middle	Green Streets			
Land Conversion	The proposed project will include reforestation of approximately 100 acres of denuded urban areas.	TBD	TBD	TBD	Urban Tree Planting	Land Use Change	Land Use Change	Land Use Change
Tributary to Proctors Creek Stream Restoration	The stream restoration consists of approximately 2600 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.382405 /-77.501893	Proctor's Creek	James River/Middle	Urban Stream Restoration	2600	NA	NA
Robius Park West Stream Restoration	The stream restoration consists of approximately 1800 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.558699 /-77.651064	Unnamed tributary to the James River	James River/Middle	Urban Stream Restoration	1800	NA	NA
Robius Park East Stream Restoration	The stream restoration consists of approximately 1900 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.556697 /-77.646124	Unnamed tributary to the James River	James River/Middle	Urban Stream Restoration	1900	NA	NA
Stonehendge Stream Restoration	The stream restoration consists of approximately 1800 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.498129 /-77.614828	Unnamed tributary to the Falling Creek	James River/Lower	Urban Stream Restoration	1800	NA	NA
Falling Creek Stream Restoration - Parks	The stream restoration consists of approximately 2500 linear feet and should improve the functions and value of the impaired stream channel by improving water quality and aquatic habitat in the creek. The restoration will establish a geomorphically stable stream channel using natural channel design principles and reduce downstream nutrient and sediment loads.	37.450817 /-77.596775	Falling Creek	James River/Lower	Urban Stream Restoration	2500	NA	NA
TOTALS						52932	265.97	356.86

Project Name	Total Phosphorous Reduced Calculated as lbs./year	Estimate of Total Project Cost	Unit Costs Calculated per Pound of Pollutant	Feasibility for Implementation Rating[2]	Condition of Downstream Channel - Pollutant of Concern	Other Benefits	Source Sector of Coverage	Scheduled of Implementation for the First Permit Cycle - Projected Start and Completion of Project by Permit Year: 12/17/14 - 12/31/15 (Initial)	01/01/16 - 12/31/16 (2nd)	01/01/17 - 12/31/17 (3rd)	01/01/18 - 12/31/18 (4th)	01/01/19 - 12/31/19 (5th)	Notes
Regional Stormwater Facility - LTC 20/25	234.10	$1,756,400.00	$7,502.00	5	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment.	The lake will provide for recreational opportunities and water quality benefits for county's reservoir located downstream. The lake will also provide for habitat for wetland plantings and lake wildlife.	Urban Areas	✓	✓				Project under construction.
Mid-Lothian Mines Park Stream Restoration	115.60	$843,306.00	$7,295.00	5	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage. Restoration techniques and outfall retrofits will provide educational opportunities for park visitors.	Urban Areas	✓	✓				Project under construction.
Wren Nest Stream Restoration	78.20	$641,566.00	$8,204.00	5	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. James River and Tributaries - City of Richmond TMDL: E. Coli. Other impairments include: Benthic - Macroinvertebrate Bioassessments.	The improvements will provide for protection of the adjacent lots, property and infrastructure, while reducing of water quantity and quality impacts downstream.	Urban Areas	✓	✓				Project under construction.
James River High School BMP Retrofits	18.10	$600,000.00	$33,149.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment	The improvements will provide for the beautification of areas around the High School and increase science, biology, and environmental education opportunities for students. The project will also provide for increased traffic safety with the addition of integrated vehicle speed control measures.	MS4 Service Area	✓	✓				Project engineering plans approved, awaiting bid proposal.
Proctors Creek Outfall Retrofits	30.00	$475,000.00	$15,833.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli, Benthic-Macroinvertebrate Bioassessments.	The improvements will provide for energy dissipation and provide for increased infiltration of storm flows within the riparian areas adjacent to the receiving stream.	MS4 Service Area	✓	✓				Project engineering plans approved, awaiting bid proposal.
Pocoshock Creek Stream Restoration	322.32	$2,208,300.00	$6,851.00	5	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli.	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas	✓	✓	✓			Project engineering plans under review.
LaPrade Library BMP Retrofit/Conversion	32.38	$820,000.00	$25,324.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli and Dissolved Oxygen	The improvements to provide for additional recreational opportunities and as well as water quality benefits downstream. The lake will also provide for habitat for wetland plantings and lake wildlife.	Urban Areas		✓	✓	✓		Project engineering plans under development.
County Safety Complex BMP Retrofits	23.48	$761,300.00	$32,423.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: pH and Dissolved Oxygen.	The improvements to provide for beautification of county complex.	MS4 Service Area	✓	✓	✓			Project engineering plans under development.
Falling Creek Reservoir Restoration	1569.00	$23,000,000.00	$14,659.00	4	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. James River and Tributaries - City of Richmond Bacterial TMDL : E. coli.	The improvements to the lake will provide for additional recreational opportunities and as well as water quality benefits downstream. The lake will also provide for habitat for wetland plantings and lake wildlife.	Urban Areas	✓	✓	✓	✓	✓	Planning and engineering plan under development. Construction to be completed in the second permit cycle.
County Complex Green Streets BMPs	18.00	$854,500.00	$47,472.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli and Benthic - Macroinvertebrate Bioassessments.	The improvements to provide for beautification of county complex and potential traffic calming effects.	MS4 Service Area					✓	Project planning under development.
Land Conversion	15.00	$100,000.00	$6,666.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment	The improvements will provide for increased habitat and provide vegetative corridors for riparian wildlife. Projects may also provide for the reduction local urban heat island effects.	Urban Areas					✓	Project planning under development.
Tributary to Proctors Creek Stream Restoration	176.80	$1,047,400.00	$5,924.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli and Benthic - Macroinvertebrate Bioassessments.	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas				✓	✓	Construction to be completed in the second permit cycle
Robius Park West Stream Restoration	122.40	$926,100.00	$7,566.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other Impairments include: PCB in fish tissue.	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas					✓	Construction to be completed in the second permit cycle
Robius Park East Stream Restoration	129.20	$955,100.00	$7,392.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other Impairments include: PCB in fish tissue.	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas					✓	Construction to be completed in the second permit cycle
Stonehendge Stream Restoration	122.40	$1,033,200.00	$8,441.00	4	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas						Planning, engineering and construction to occur in the second permit cycle.
Falling Creek Stream Restoration - Parks	170.00	$1,000,000.00	$5,882.00	3	Chesapeake Bay TMDL: Nitrogen, Phosphorus & Sediment. Other impairments include: E. coli.	The improvements will provide for the ability to accommodate current and future flows, sustain a healthy habitat, improve water quality and protect adjacent properties from flood damage.	Urban Areas						Planning, engineering and construction to occur in the second permit cycle.
TOTALS	3176.98	$37,022,172.00	$240,583.00										

Revision 12/17/2015

NOTES
TBD = To be determined
NA = Not applicable
[1]For urban stream restoration projects, the value is expressed in linear feet and the DEQ default rate (0.068 lbs./linear ft.) was used to determined the total phosphorous reduction.
[2]Projects were screened for feasibility on implementation based on the items below. The higher the rating, up to five, the more likely the project will be implemented.

Items	Confirmation Response
Countywide Strategic Goal (Primary)	MS4 Permit/TMDL Compliance
Department Priority	Yes
Project Requested in Previous Years?	Yes
Project Funded Previously?	Yes
Location/Site Status	Public Property or Easement Granted